

# Upgradation of ITIs into Centres of Excellence

## **Syllabi of Advanced Modules**

### Sector "Food Processing"

## **Directorate General of Employment & Training**

### **M/o Labour & Employment**

<b>FPAT -01</b>	<b>Food and Vegetables Processing</b>
<b>FPAT-02</b>	<b>Cereal, Pulses and Oilseed Processing</b>
<b>FPAT-03</b>	<b>Food Beverage</b>
<b>FPAT-04</b>	<b>Milk and Milk Products</b>
<b>FPAT-05</b>	<b>Meat, Fish &amp; Poultry Processing</b>

**Upgradation of ITIs into Centres of Excellence-**  
**Broad guidelines for implementation of Advanced Module of Sector**  
**“Food Processing ”.**

These Centres will be providing multiskill training to meet the skill requirement of particular sector of industry with their active involvement in all aspects of training. The training will be provided in three parts as given below:

- ◆ Training in Basic skill areas for a period of one year.
- ◆ Training in Advanced modules of six months duration after Broad based basic Training(BBBT)
- ◆ Testing & Certification both for the Broad Based Basic Training & Advanced Module Training during subsequent six months will be conducted under the aegis of NCVT .
- ◆ Training in specialized modules mainly by the industry (The course curricula, duration etc will be designed in consultations with the IMC/local industry). The trade testing & certification for specialized module will be done jointly by the State Government & Industry. Said certificate will have recognition from NCVT
- ◆ As per the recommendations of the EFC, Training in the shop floor should constitute atleast 25-40% of the curriculum.

The training programme will have multi-entry and multi-exit provisions as given below:

- trainee can opt to go to the labour market after completing broad based basic training of one year duration or after completing advanced module/s.
- multi-entry and multi-exit provisions would enable a trainee to take admission for advanced/ additional advanced /specialized module as per his/her need .

**Guidelines for Training in Advanced modules**

- A minimum of three modules would be essentially needed , so as to ensure that all the 96 trainees are accommodated in the three modules may be selected in consultation with IMC for which in two shifts .
- If it is felt that available modules for which the course curricula has been developed at National Level are not sufficient to cater to the needs of local industry in a particular state, States are free to select module as per need in consultation with industry . They may develop suitable module(s) accordingly in consultations with the industry clearly indicating tool & equipment list , instructor qualifications , space norms etc. & forward the same to DGE&T for seeking approval of NCVT.
- A trainee at a time can opt only for one Advanced Module .
- Admission Criteria, Space requirement, Qualification of instructor of the various modules of “**Food Processing** ” sector are attached herewith.

**Admission to Advanced Module for the graduates of ITI in related trades:**

There is a provision for lateral entry for graduates of ITIs (NTC /NAC passed outs from conventional system ) of the related trades subject to availability of seats in Advanced Module. Trades of conventional system mentioned against each advanced module in the following statement, could be offered admission in Advanced Module .

Sl.No.	Name of the Module	Admission criteria	Space requirement	Duration In Weeks	Qualification/ Status Of Instructor
FPAT -01	Food and Vegetables Processing	Completed BBBT in Sector Food Processing or NTC/NAC in relevant trade	70 sq m	24 weeks	Degree/MSc in Food Processing /Food Technology with minimum two years teaching/industrial experience in the relevant field OR Diploma in Food Processing /Food Technology with minimum four years teaching/industrial experience in the relevant field
FPAT-02	Cereal, Pulses and Oilseed Processing	Completed BBBT in Sector Food Processing or NTC/NAC in relevant trade			
FPAT-03	Food Beverage	Completed BBBT in Sector Food Processing or NTC/NAC in relevant trade			
FPAT-04	Milk and Milk Products	Completed BBBT in Sector Food Processing or NTC/NAC in relevant trade			
FPAT-05	Meat, Fish & Poultry Processing	Completed BBBT in Sector Food Processing or NTC/NAC in relevant trade			

# Module I

## FRUITS AND VEGETABLES PROCESSING

Theory	Practicals
<ul style="list-style-type: none"><li>❑ Introduction, importance of Fruits and vegetables Preservation Technology</li><li>❑ Nature of the fruits and vegetables in respect of their preservation</li><li>❑ Different terms used in processing</li><li>❑ Groups of fruits and vegetables on the basis of pH, physiology changed (perishable nature) technology.</li><li>❑ Principle &amp; techniques involved for different Fruit &amp; Vegetable preservation.</li></ul>	<ul style="list-style-type: none"><li>✓ Collect seasonal fruits and vegetable products.</li><li>✓ Categories different fruits and vegetable products, according to criteria.</li><li>✓ Operate different food machinery</li><li>✓ Perform Canning operations.<ul style="list-style-type: none"><li>• Caning of<ul style="list-style-type: none"><li>○ Mango slice,</li><li>○ Guava,</li><li>○ Pineapple,</li><li>○ Strawberry,</li><li>○ Grapes,</li><li>○ Potato,</li><li>○ Cucumber,</li><li>○ Mushroom,</li><li>○ Spinach,</li><li>○ Cauliflower,</li><li>○ Cabbage etc</li></ul></li></ul></li></ul>

Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Canning fruits and vegetables, process flow diagram for canning, canning machinery, pretreatments before canning operations, basic requirements (brine/syrup/chemicals)</li>   <li>❑ Fruits and vegetable drying/dehydration: General methods of fruits &amp; vegetable drying /dehydration, sun drying, mechanical drying, types of dryers, characteristics of dried fruits and vegetables, treatments prior to drying, general process of fruit and vegetable drying. Specialized drying operations in fruits and vegetables.</li>   <li>❑ Jam and jelly : Principle of making jam and jellies, suitability of the fruits for the preparation of jam &amp; jellies, process flow diagram for jam and jellies. Test of pectin for jam and jelly preparation</li>   <li>❑ Glazed fruits, candy, fruit bar and toffees : Principle and methods of production</li>   <li>❑ Pickles : Principle of pickle production, different types of pickles from fruits and vegetables, fermented pickles, oil pickles, vinegar pickles.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Drying carryout operations on fruits and vegetables using different dryers. <ul style="list-style-type: none"> <li>• Drying of <ul style="list-style-type: none"> <li>○ Mango slice,</li> <li>○ Apple rings,</li> <li>○ Grapes,</li> <li>○ Pear,</li> <li>○ Pineapple,</li> <li>○ Fig,</li> <li>○ Banana,</li> <li>○ Pomegranate,</li> <li>○ Bael fruit,</li> <li>○ Papaya and</li> <li>○ Other fruits,</li> <li>○ Tomato slices,</li> <li>○ Okra,</li> <li>○ Brinjal,</li> <li>○ Potato,</li> <li>○ Ginger,</li> <li>○ Bitter guard</li> <li>○ Other vegetables</li> </ul> </li> </ul> </li>   <li>✓ Test pectin in fruit juices &amp; pulps.</li>   <li>✓ Visit process plants and write a report.</li> </ul>

Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Tomato product: Preparation methods of tomato ketchup, chutney, sauce, puree, paste.</li> <li>❑ Potato chip manufacturing, finger chips process and machinery.</li> <li>❑ Vinegar : Different types of vinegars, principle of vinegar production, characteristics of good quality vinegar.</li> <li>❑ Wastes from fruits and vegetables, processing techniques for proper utilization of wastes from fruits and vegetables.</li> <li>❑ Quality factors in fruit and vegetable processing &amp; preservation</li> <li>❑ Storage techniques for fruits and vegetables, cold storage, refrigeration.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Practice on preparation of different fruit jams like, <ul style="list-style-type: none"> <li>• Mango,</li> <li>• Apple,</li> <li>• Pineapple,</li> <li>• Banana,</li> <li>• Papaya</li> <li>• Amla,</li> <li>• Mixed fruit</li> <li>• Other fruits</li> </ul> </li> <li>✓ Practice on preparation of different fruit jelly from fruits like, <ul style="list-style-type: none"> <li>• Apple,</li> <li>• Guava,</li> <li>• Jackfruit</li> <li>• Amla</li> <li>• Other fruits</li> </ul> </li> <li>✓ Prepare jam and jelly marmalades</li> <li>✓ Test end point in jam and jelly.</li> <li>✓ Prepare glazed fruits, candy, fruit bar and toffees.</li> </ul>

Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Analytical methods for evaluation of chemical and nutritional composition of fruits and vegetables, equipment used.</li> <li>❑ Location of faults</li> <li>❑ Safety in fruits and vegetable industry</li> </ul> <p><b>Indian Food Standard</b></p> <ul style="list-style-type: none"> <li>▪ Food safety standard Act 2005 &amp; Bill 2005</li> <li>▪ Prevention of Food adulteration Act 1954 (37-1954)</li> <li>▪ Fruit produced order 1955</li> <li>▪ Any order issued under essential commodity Act 1955</li> </ul> <p><b>International Food Standard (SPS, TBT, Drug, Residues Chemicals, GMO)</b></p> <p><b>Codex Alimentarius (FAO Food &amp; Nutrition Paper) FAO 2003</b></p>	<ul style="list-style-type: none"> <li>✓ Prepare different types of pickle from fruits and vegetables: <ul style="list-style-type: none"> <li>• Fermented pickle,</li> <li>• Oil pickle,</li> <li>• Vinegar pickles,</li> <li>• Mixed pickles</li> </ul> </li> <li>✓ Prepare tomato ketchup, sauce, puree &amp; paste.</li> <li>✓ Prepare potato chips &amp; finger chips.</li> <li>✓ Prepare synthetic, fermented and flavoured vinegars</li> <li>✓ Prepare products from wastes e.g. Vinegar from pineapple waste, pectin from citrus fruits wastes, vinegar and protein isolate mango kernel, starches.</li> <li>✓ Analyse fruits and vegetables for their quality.</li> <li>✓ Identify fault and take corrective measures.</li> </ul>

## List of equipment, tools and instruments

Sl. No.	Item/ Specification	Quantity proposed for a batch of 16 trainees
1.	Working tables	02
2.	Improved stoves	03
3.	Stainless steel pots of different capacities	04 sets
4.	Stainless steel knives, 12-15 cm blade	08
5.	Stainless steel spoons, various shapes and sizes	08 sets
6.	Glass jars, various sizes and screw-on caps	50
7.	Bottle brushes	10
8.	Solar drier	01
9.	Wooden spoons	08
10.	Juice extractor	02
11.	Pulper	01
12.	Vinegar generator	02
13.	Fermenter,	01
14.	Crown corking machine	01



<b>Sl. No.</b>	<b>Item/ Specification</b>	<b>Quantity proposed for a batch of 16 trainees</b>
15.	Bottle filling machine	01
16.	Cabinet dryer	01
17.	Soda water machine	01
18.	Basket press	01
19.	Filter press	01
20.	Pouch packing machine	01
21.	Farm fill seal machine	01
22.	Vegetable cutter	01
23.	Food Processor with vegetable cutting attachment	01

- Raw material and consumables are not included in the list.

## Module II

### CEREALS, PULSES AND OILSEEDS PROCESSING (MILLING AND BAKING)

Theory	Practicals
<ul style="list-style-type: none"><li>❑ Introduction to industrially important cereals, pulses and oilseeds, importance, role and share of bakery and confectionery in food industry, different industrial bakery products.</li><li>❑ Different cereal and flours for the bakery products, quality of flour for the production of bakery items.</li><li>❑ Primary processing of wheat,</li><li>❑ Methods of cleaning, grading, milling &amp; associated precautions.</li><li>❑ Standards for the wheat flour</li><li>❑ Methods of production of different wheat product</li><li>❑ Role of flour, fat, bakers, yeast, sugar and salt as bakery ingredient.</li><li>❑ I.S.I. standards for flour, fat, Baker's yeast.</li></ul>	<ul style="list-style-type: none"><li>✓ Market carryout survey for the competition among the available bakery products.</li><li>✓ Clean, grade and carryout other pre-processing activities on cereal, pulses &amp; oil seeds.</li><li>✓ Select material &amp; ingredients for production of breads.</li><li>✓ Operate different food machinery.</li></ul>

Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Bread : Principles involved for bread production, different types of breads and their properties, ingredients used and their role in bread production, factors affecting the quality of the bread,</li> <li>❑ Biscuits: Method of biscuit production, ingredients for biscuit production and their role in the quality of the biscuits, machinery involved in biscuit production, factors affecting the quality.</li> <li>❑ Cakes : methods for the production of cakes, ingredients for cake production, machinery involved in cake production , factors affecting the quality .</li> <li>❑ Starches: availability of starch in different cereals. Different uses of starch, extraction of starch, different products of grain starch</li> </ul>	<p>✓ Prepare</p> <ul style="list-style-type: none"> <li>○ Breads: <ul style="list-style-type: none"> <li>• Plain bread,</li> <li>• Fermented bread,</li> <li>• Protein rich bread and</li> <li>• Special breads</li> </ul> </li> <li>○ Biscuits.: <ul style="list-style-type: none"> <li>• Popular biscuits.</li> <li>• Specialized biscuits.</li> <li>• Other products like cookies, crackers.</li> </ul> </li> <li>○ Cakes <ul style="list-style-type: none"> <li>• Different types of popular cakes.</li> <li>• Different types of specialized cakes.</li> </ul> </li> <li>○ Others <ul style="list-style-type: none"> <li>• Corn starch,</li> <li>• Starch biscuits,</li> <li>• Namkins,</li> <li>• Snacks.</li> </ul> </li> </ul>

Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Machinery and equipments used in bakeries e.g. flour mill, mixer, moulding machines, oven balance, packing machines, operating guidelines.</li> <li>❑ Noodles and extruded foods, preparation methods and machinery used.</li> <li>❑ Soya product, processing methods of soya-atta, soya-snacks, namkins, soya milk, soya paneer (tofu), soya-srikhand. Processing machinery for soya products. Hygiene &amp; safety considerations.</li> <li>❑ Raw material for papad production.  Method of preparation of different types of papads, machinery for papad preparation, packaging and quality of papad, mini papads. Hygiene &amp; safety considerations.</li> <li>❑ Safety, measures.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Test raw material and product for their quality.</li> <li>✓ Prepare noodles and extruded food products using machine safely.</li> <li>✓ Identification faults and remove.</li> <li>✓ Observe hygienic practices.</li> </ul>

## **Indian Food Standard**

- Food safety standard Act 2005 & Bill 2005
- Prevention of Food adulteration Act 1954(37-1954)
- Any order issued under essential commodity Act 1955
- Hazard Analysis and Critical Control Point(HACCP)

## **International Food Standard(SPS,TBT,Drug,Residues Chemicals,GMO)**

Codex Alimentarius (FAO Food & Nutrition Paper) FAO2003

## List of equipment, tools and instruments

Sl. No.	Item/ Specification	Quantity proposed for a batch of 16 trainees
1.	Flour mill/mini grain mill	1
2.	Planetary mixer	1
3.	Moulding machines	1
4.	Sheeting machine	1
5.	Bread cutting machine	1
6.	Oven	1
7.	Packing machine	1
8.	Electronic balance	2
9.	Physical balance	2
10.	Working Table SS	2
11.	Biscuit moulds of different sizes	10
12.	Cake dies	20
13.	Grain cleaner	01
14.	Mini grain mill	01

<b>Sl. No.</b>	<b>Item/ Specification</b>	<b>Quantity proposed for a batch of 16 trainees</b>
15.	Wheat flour mill	01
16.	Micro Pulverizer	01
17.	Hammer mill	01
18.	Cabinet air dryer	01
19.	Pouch Packaging/Sealing machine	04
20.	Storage Bins of different capacity	01
21.	Electronic balance	02
22.	Platform scale balance	01
23.	Electric oven	02
24.	Moisture box	01
25.	Packaging material	Assorted
26.	Destoner	1
27.	Papad Press	1

- Raw material and consumables are not included in the list

## Module III

### FOOD BEVERAGE

Theory	Practicals
<ul style="list-style-type: none"><li>❑ Introduction, importance of food beverages for entrepreneurship development, scope of food beverages, need of particular beverage</li><li>❑ Types of beverages</li><li>❑ Definition and classification of food beverages</li><li>❑ Raw materials used for beverages, and their properties.</li><li>❑ Standards for food beverages.</li><li>❑ Types &amp; methods of preparation of fruit juices, syrups, sherbets, fermented and non fermented beverages, alcoholic beverages,</li><li>❑ Carbonated and non carbonated beverages, synthetic juices, soft drinks types and methods of preparation.</li><li>❑ Quality of water for beverages.</li></ul>	<ul style="list-style-type: none"><li>✓ Study of the different food beverages available in the market.</li><li>✓ Identify different food beverages and their categories.</li><li>✓ Select different raw materials for food beverage production.</li><li>✓ Select ingredients for soft drink production</li><li>✓ Prepare different soft drinks</li><li>✓ Pack soft drinks (Bottling, poly pouches, pepsi type, can, etc).</li><li>✓ Test quality in soft drinks &amp; water.</li><li>✓ Prepare different types of fruit juices.</li><li>✓ Prepare beverages hygienically.</li></ul>



Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Food additives used in beverages.</li> <li>❑ Quality control in a beverage industry</li> <li>❑ Principle and methods for fruits juice manufacture, machinery used in different fruits juice extraction</li> <li>❑ Methods of preparation of Ready-To-Serve (RTS) fruit beverages.</li> <li>❑ Methods of preparation of Squash, fruit juice, nectar concentrate, syrup, sherbets.</li> <li>❑ Process of manufacture of fruits juices.</li> <li>❑ Quality control in Beverage industry.</li> <li>❑ FPO standards for fruit Beverages.</li> <li>❑ Beverage from other materials &amp; grains</li> <li>❑ Malt, vegetable (tomato), herbs &amp; medicinal plants</li> </ul>	<ul style="list-style-type: none"> <li>✓ Prepare Ready-To-Serve (RTS) fruit beverages,</li> <li>✓ Produce squash, fruit juice, nectar, concentrate.</li> <li>✓ Test quality of beverage.</li> <li>✓ Prepare malt syrup, badam, pista, herbal, concentrates, rose syrup.</li> <li>✓ Purify beverages using proper techniques.</li> <li>✓ Prepare mineral water from mini water treatment plant.</li> <li>✓ Test quality of packaged water.</li> </ul>

Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Principle and method for production of mineral water.</li> <li>❑ Quality standard (BIS) of water.</li> <li>❑ Different types of water, RO, UV, Ozonated water.</li> <li>❑ Principle and Method of soda water production, Quality standards, raw material used.</li> <li>❑ Equipment used e.g. Juice extractor, pulper, fermenter, vinegar generator, crown corking machine, bottle filling machine, Soda water machine, basket press, filter press.</li> <li>❑ Safety &amp; hygiene.</li> <li>❑</li> </ul>	<ul style="list-style-type: none"> <li>✓ Prepare soda water.</li> <li>✓ Pack, label and store of soda water.</li> <li>✓ Prepare malt extract.</li> <li>✓ Prepare beer.</li> <li>✓ Prepare cider, vinegar, banana, pineapple beverages.</li> <li>✓ Operate all equipment safely.</li> <li>✓ Identify and remove faults in machines.</li> </ul>

### Indian Food Standard

- Food safety standard Act 2005 & Bill2005

- Prevention of Food adulteration Act 1954(37-1954)
- Fruit producer order 1955
- Any order issued under essential commodity Act 1955
- Hazard Analysis and Critical Control Point(HACCP)

**International Food Standard(SPS,TBT,Drug,Residues Chemicals,GMO)**

Codex Alimentarius (FAO Food & Nutrition Paper) FAO2003

## List of equipment, tools and instruments

Sl. No.	Item/ Specification	Quantity proposed for a batch of 16 trainees
1.	Juice extractor	01
2.	Pulper	01
3.	Vinegar generator	01
4.	Fermenter,	01
5.	Crown corking machine	01
6.	Bottle filling machine	01
7.	Vacuum filter	01
8.	Soda water machine	01
9.	Basket press	01
10.	Filter press	01
11.	Pouch packing machine	01
12.	Farm fill seal machine	01
13.	Centrifuge	01
14.	Working table	02

<b>Sl. No.</b>	<b>Item/ Specification</b>	<b>Quantity proposed for a batch of 16 trainees</b>
15.	Improved stoves	03
16.	Stainless steel pots	05 sets
17.	Storage vessel, SS	02
18.	Stainless steel knives	12
19.	Glass jars, various sizes and screw-on caps	100
20.	Wooden spoons	05
21.	Bottles	100
22.	Crown caps	100
23.	Lemon Extractor	01
24.	Laboratory Spray dryer	01

- Raw material and consumables are not included in the list

## Module IV

### MILK AND MILK PRODUCTS

Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Operation Flood, importance of dairy industry opportunities of employment in the vocation.</li> <li>❑ Property of milk, quality of raw milk</li> <li>❑ Different products made from the milk.</li> <li>❑ Different dairy products useful for marketing.</li> <li>❑ Principle and methods used for milk processing. Quality parameters.</li> <li>❑ Methods for production of different types of milks - pasteurized, standard, toned, double toned, flavoured milk.</li> <li>❑ Ingredients of special milks, fermented milk.</li> <li>❑ Preparation methods of Cheese, Chhena, Mawa,</li> <li>❑ Methods of preparation of Dahi, Srikhand, Cream, Buttermilk etc</li> <li>❑ Different methods of Ghee production, quality of ghee</li> </ul>	<ul style="list-style-type: none"> <li>✓ Conduct market survey of different dairy products available.</li> <li>✓ Survey of availability of the raw material for dairy industry</li> <li>✓ Visit and study of a dairy plant.</li> <li>✓ Test milk for its quality.</li> <li>✓ Conduct primary processing of market milk &amp; store.</li> <li>✓ Production of               <ul style="list-style-type: none"> <li>• Pasteurized milk,</li> <li>• Standard milk,</li> <li>• Toned milk,</li> <li>• Double toned milk</li> <li>• Flavoured milk,</li> <li>• Fermented milk.</li> </ul> </li> <li>✓ Store product hygienically.</li> </ul>

Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Principles and methods of ice-cream production, quality of ice cream, different types of ice cream.</li> <li>❑ Butter production, quality of butter.</li> <li>❑ Overrun calculation</li> <li>❑ Preparation methods of different dairy based sweets</li> <li>❑ Storage of sweets.</li> <li>❑ Other dairy products like dried milk, condensed milk, cheese.</li> <li>❑ Standards of milk and milk products.</li> <li>❑ Act 1992(41-1992) The infant milk substitute feeding bottles and infant food (regulation of production supply distribution )</li> <li>❑ Hygiene in dairy processing unit, cleaning systems in dairy industry.</li> <li>❑ Format for inspection of dairy plants fifth schedule of MMPO ( Milk &amp; Milk Product Order 1992</li> <li>❑ Equipment used : Cream Separator, deep fridge, cheese vat, pasteurizer, kettle, butter churner, boiler, (optionally mini dairy plant)</li> <li>❑ Location of faults in plants &amp; machines.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Preparation of <ul style="list-style-type: none"> <li>• Cheese,</li> <li>• Chhena,</li> <li>• Mawa,</li> <li>• Dahi,</li> <li>• Srikhand,</li> <li>• Ghee,</li> <li>• Cream,</li> <li>• Buttermilk</li> </ul> </li> <li>✓ Production of Ghee by different methods.</li> <li>✓ Prepare ice cream, test quality &amp; store.</li> <li>✓ Prepare butter, test quality of butter, carryout overrun calculations.</li> <li>✓ Prepare different dairy based sweets.</li> <li>✓ Prepare different dairy products like <ul style="list-style-type: none"> <li>• Dried milk (spray dried)</li> <li>• Condensed milk,</li> <li>• Cheese</li> </ul> </li> <li>✓ Operate equipment used e.g. Cream Separator, deep fridge, cheese vat, pasteurizer, kettle, butter churner, boiler, (optionally mini dairy plant).</li> <li>✓ Carryout cleaning operation (CIP System).</li> <li>✓ Identify fault &amp; remove.</li> </ul>

### **Indian Food Standard**

- Food safety standard Act 2005 & Bill 2005
- Prevention of Food adulteration Act 1954(37-1954)
- Meat food product order 1973
- Any order issued under essential commodity Act 1955
- Hazard Analysis and Critical Control Point(HACCP)

### **International Food Standard(SPS,TBT,Drug,Residues Chemicals,GMO)**

Codex Alimentarius (FAO Food & Nutrition Paper) FAO2003



## List of equipment, tools and instruments

Sl. No.	Item/ Specification	Quantity proposed for a batch of 16 trainees
1.	Mini dairy plant	01
2.	Milk Chiller	01
3.	Milk cans	10
4.	Cream separator,	01
5.	Cheese vat	01
6.	Plate pasteurizer	01
7.	Butter churner	01
8.	Boiler	01
9.	Deep fridge	01
10.	kettle	02
11.	Mawa machine	01
12.	Crown capping machine	04
13.	Form fill-seal machine	01
14.	Ice cream plant	01
15.	Working table SS	02
16.	Water purifier	01
17.	Centrifuge	02
18.	Laboratory spray dryer	06
19.	Gerber tubes for fat estimation	01

- Raw material and consumables are not included in the list .

## Module V

### MEAT, FISH & POULTRY PROCESSING

Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Introduction, importance of meat processing for entrepreneurship development</li> <li>❑ Scope of meat processing industry</li> <li>❑ Methods of meat processing.</li> <li>❑ Post mortem changes during meat processing.</li> <li>❑ Quality of meat</li> <li>❑ Canning, pickling, preservation of meat.</li> <li>❑ Principle and methods of fish processing</li> <li>❑ Quality of fish suitable for processing.</li> <li>❑ Dehydration, canning, pickling of fish, Fishmeal protein, fishmeal powder.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Conduct survey of the different meat processing industries.</li> <li>✓ Carryout survey of the different processed products from meat fish and poultry</li> <li>✓ Carryout meat processing : cutting (carcassing), cleaning storage, sanitation.</li> <li>✓ Conduct practicals on canning, pickling, preservation of meat.</li> <li>✓ Check quality of fish for processing.</li> <li>✓ Produce Dehydrated canned, pickled fish, Fishmeal protein, and fishmeal powder.</li> </ul>

Theory	Practicals
<ul style="list-style-type: none"> <li>❑ Importance of egg production.</li> <li>❑ Storage and preservation methods of eggs.</li> <li>❑ Production methods of egg albumin, powder and other useful products from egg.</li> <li>❑ Quality of egg and products.</li> <li>❑ Pickling, canning of egg</li> <li>❑ Methods of chicken processing, techniques involved in processing.</li> <li>❑ Processing of other birds</li> </ul>	<ul style="list-style-type: none"> <li>✓ Produce egg albumin, powder and other useful products from egg.</li> <li>✓ Prepare canned egg and canned egg pickle.</li> <li>✓ Process chicken and test quality.</li> <li>✓ Prepare processed product from chicken and other birds e.g. Sausages, pickle, dried chicken.</li> </ul>

## List of equipment, tools and instruments

Sl. No.	Item/ Specification	Quantity proposed for a batch of 16 trainees
1.	Meat mincer	01
2.	Pulverizer	01
3.	Meat cutting knives, heavy duty	04
4.	Cooking stoves	02
5.	Water purifier	01
6.	Seed germinator	01
7.	Heat sealing machine	01
8.	Cutting machine	01
9.	Canning unit	01
10.	Heat sealing machine	01
11.	Lug cap bottle sealing machine	01
12.	Cabinet dryer	01
13.	Refrigerator	02
14.	Deep fridge	02
15.	Pressure cookers	04
16.	Steel Bhagonas	05
17.	SS Ladles	05
18.	Wooden paltas	05

- Raw material and consumables are not included in the